



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/833,494	04/12/2001	Kevin J. Knopp	CORE-63	2974

7590 11/18/2002
Pandiscio & Pandiscio
470 Totten Pond Road
Waltham, MA 02451-1914

EXAMINER

LEUNG, QUYEN PHAN

ART UNIT	PAPER NUMBER
----------	--------------

2828

DATE MAILED: 11/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/833,494

Applicant(s)

KNOPP ET AL.

Examiner

Quyen P. Leung

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 August 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 12-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of group I (claims 1-11) drawn to a VCSEL in Paper No. 7 is acknowledged.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Jewell (5,822,356). Jewell discloses the claimed invention of a series of deposited material layers (see figure 13 for elements 152, 162, 144, 164, 166, 168, 150) comprising the structure of the VCSEL (148) and an intracavity lens (166) formed in one of the series of deposited material layers (see figure 13 for elements 152, 162, 144, 164, 166, 168, 150).
4. Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Fukuzawa et al (4,827,483). Fukuzawa et al discloses the claimed invention of a series of deposited material layers (9, 10, 11, 12, 13) comprising the structure of the "VCSEL" and an intracavity lens (inherent, see discussion below) formed in one of the series of deposited material layers (9, 10, 11, 12, 13). Since Fukuzawa et al teaches a series of

Art Unit: 2828

deposited material layers, which as claimed, defines a "VCSEL" structure, the device of Fukuzawa et al inherently is a "VCSEL" to the extent claimed by applicant.

Regarding the intracavity lens, see figures 6-7 and col. 6 line 33 through col. 7 line 12, which together show the series of deposited material layers (9, 10, 11, 12, 13) comprising a superlattice structure (11), with an adjacent region (16) being subjected to ion implantation (see col. 6 lines 57-59) and rapid thermal annealing (see col. 6 line 63 through col. 7 line 3) so as to disorder the superlattice structure (11) and change its refractive index of refraction (see col. 6 line 67 through col. 7 line 1), whereby to create the intracavity lens.

5. Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Ashby et al (4965806). Ashby et al discloses the claimed invention of a series of deposited material layers (30, 32, 34, 40, 42, 44) comprising the structure of the "VCSEL" and an intracavity lens (inherent, see discussion below) formed in one of the series of deposited material layers (30, 32, 34, 40, 42, 44). Since Ashby et al teaches a series of deposited material layers, which as claimed, defines a "VCSEL" structure, the device of Ashby et al inherently is a "VCSEL" to the extent claimed by applicant.

Regarding the intracavity lens, see figure 3d and col. 4 line 57 through col. 5 line 21, which together show the series of deposited material layers (30, 32, 34, 40, 42, 44) comprising a superlattice structure (42, see col. 4 line 63), with an adjacent region (as determined by mask 44, which has a similar concave shape to concave mask 50 in applicant's figure 13) being subjected to ion implantation (see col. 5 lines 6) and rapid

Art Unit: 2828

thermal annealing (see col. 5 lines 7-9) so as to disorder the superlattice structure (11) and change its refractive index of refraction (see col. 4 line 68), whereby to create the intracavity lens.

6. Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Yoshida (5,307,200). Yoshida discloses the claimed invention of a series of deposited material layers (21'-29') comprising the structure of the "VCSEL" and an intracavity lens (inherent, see discussion below) formed in one of the series of deposited material layers (21'-29'). Since Yoshida teaches a series of deposited material layers, which as claimed, defines a "VCSEL" structure, the device of Yoshida inherently is a "VCSEL" to the extent claimed by applicant.

Regarding the intracavity lens, see figures 8-10 and col. 10 line 10 through col. 11 line 45, which together show the series of deposited material layers (21'-29') comprising a superlattice structure (23', see col. 10 lines 48-49), with an adjacent region (27') being subjected to ion implantation (see col. 10 lines 45-48) and rapid thermal annealing (see col. 10 line 53) so as to disorder (see col. 10 lines 48-53) the superlattice structure (27') and change its refractive index of refraction (see col. 10 lines 48-53), whereby to create the intracavity lens.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 3-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida (5,307,200) in view of Jewell (5,822,356). Yoshida discloses the claimed invention except for the bottom spacer between the bottom mirror (28') and the gain region (23') and a top spacer between the gain region (23') and the top mirror (29'). Jewell shows that the use of bottom and top spacers (162, 168) are well-known for separating the respective mirrors from the gain region. It would have been obvious to one of ordinary skill in the art to modify Yoshida by employing top and bottom spacers, as taught by Jewell, so as to gain the advantageous benefit of separating the respective mirrors from the gain region.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quyen P. Leung whose telephone number is (703) 308-0545. The examiner can normally be reached on 8:30-5:00, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone numbers for the

Art Unit: 2828

organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Quyen P. Leung
Primary Examiner
Art Unit 2828

QPL
November 14, 2002